

**What is claimed is:**

1. A method of manufacturing semiconductor devices, comprising the steps of:
  - 5 forming a gate electrode on a semiconductor substrate;
  - depositing an oxide film for a spacer on the gate electrode;
  - implementing an anisotropic dry etch process for the oxide film for the spacer to form spacers at the sidewalls of the gate electrode; and
  - implementing a rapid thermal annealing process for the spacers under an
  - 10 oxygen atmosphere in order to segregate hydrogen contained within the spacers toward the surface.
2. The method as claimed in claim 1, wherein the oxide film for the spacer is a high temperature oxide (HTO) film using  $\text{SiH}_2\text{Cl}_2$  (dichlorosilane).
- 15 3. The method as claimed in claim 1, wherein the oxide film for the spacer is deposited in thickness of  $400 \sim 1000 \text{ \AA}$  at a temperature of  $680 \sim 730^\circ\text{C}$ .
- 20 4. The method as claimed in claim 1, wherein the rapid thermal annealing is implemented at a temperature of  $750 \sim 1050^\circ\text{C}$  under an oxygen atmosphere.

5. The method as claimed in claim 1, wherein the rapid thermal annealing is implemented by ramping up the temperature up to the annealing temperature at the rate of 5°C/sec and introducing oxygen at the flow of about 3 ~ 15 SLM.

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6. The method as claimed in claim 1, wherein the step of forming the gate electrode comprises the steps of:

forming a tunnel oxide film on the semiconductor substrate;

depositing a conductive film for a floating gate on the tunnel oxide film

10 and patterning the conductive film to form a floating gate;

depositing a dielectric film and a conductive film for a control gate on the semiconductor substrate; and

patterning the conductive film for the control gate, the dielectric film and the conductive film for the floating gate.